

**Claims:**

1. Sealing arrangement for two relatively movable first and second parts and including a sealing ring positioned in a groove on one of the parts for sealing contact against the other one of the parts, so as to separate a first side of the sealing ring from a second side of the sealing ring, wherein the sealing ring is positioned in a sealing ring seat formed as a groove in the circumference of one of the parts,  
10 **characterized in that it includes:**
- liquid supply means for supplying liquid under pressure to the second side of the sealing ring, and
  - means for balancing the pressure of the supplied liquid in the region of the sealing ring,
- 15 whereby forces on the sealing ring resulting from the pressure prevailing on the first side of the sealing ring are counteracted and balanced in such a way that in operation the sealing ring is essentially free-floating in the groove.
- 20 2. Arrangement according to claim 1, including a valve device which is set to balance the pressure of the supplied liquid in the area of the sealing ring.
- 25 3. Arrangement according to claim 1 or 2, wherein the valve device is preset to limit the pressure of the supplied liquid.
4. Arrangement according to claim 3, wherein the valve device is set to limit the pressure to about 80 - 100% of the pressure inside the pressure chamber.
- 30 5. Arrangement according to any of the claims 2 - 4, **characterized in that the valve device is comprised of a**

portion of the sealing ring in co-operation with the sealing ring seat.

5 6. Arrangement according to claim 5, **characterized in that** said portion of the sealing ring is a ring surface directed from the first side which is arranged to co-operate with a surface of said seat.

10 7. Arrangement according to claim 5, **characterized in that** said portion of the sealing ring is an edge portion or a separate sealing element directed radially from the element it is intended to seal against.

15 8. Arrangement according to claim 3, **characterized in that** the valve device is a pressure controlled valve which is separate from the sealing ring.

20 9. Arrangement according to any of the claims 1 - 8, **characterized in** a sealing device for sealing between the relatively movable parts in a position opposite to the sealing ring as seen from the position of the means for liquid supply.

25 10. Arrangement according to claim 9, wherein said sealing device is formed by a first, high pressure seal member (32) and a second, low pressure seal (35), and an intermediate space (44) having a fluid outlet (33).

30 11. Arrangement according to claim 10, wherein the fluid outlet is a low pressure outlet for eliminating pressure build-up in the intermediate space (44).

12. Arrangement according to any of the claims 1 - 11, wherein the first and second parts are relatively reciprocating.

13. Arrangement according to claim 12, wherein the first and second parts are a cylinder and a piston forming a pressure chamber.

5 14. Arrangement according to any of the claims 1 - 11, wherein the first and second parts are relatively rotatable.

10 15. Arrangement according to any of the claims 1 - 14, wherein at least one of the parts includes at least one outlet channel for supplied liquid.

15 16. Reciprocating piston device including a cylinder and a relatively movable piston and a sealing ring which is positioned in a seat formed as a groove in the circumference of one of the piston and the cylinder for sealing contact between the piston and the cylinder, so as to separate a first side of the sealing ring from a second side of the sealing ring, said piston and cylinder forming a pressure chamber, characterized in that it includes:

20 - liquid supply means for supplying liquid under pressure to the second side of the sealing ring, and  
- means for balancing the pressure of the supplied liquid in the region of the sealing ring,  
whereby forces on the sealing ring resulting from the pressure prevailing on the first side of the sealing ring are  
25 counteracted and balanced in such a way that in operation the sealing ring is essentially free-floating in the groove.

30 17. Device according to claim 16, characterized in that the liquid supply means includes an enlarged piston portion for co-operation with an enlarged cylinder portion.

18. Device according to claim 17, characterized in that a working chamber which is formed by said piston and cylinder portions is ring-shaped.

5 19. Device according to claim 16, characterized in that the liquid supply means includes an external pump having supply conduit (-s) debouching in any element from the group: a cylinder wall, a crankcase, a piston wall.

10 20. Device according to claim 19, characterized in that the liquid supply means includes any liquid pump such as: for example a gear type pump, a reciprocating piston pump, an impeller pump, a screw pump or a rotary piston pump.

15 21. Device according to any of the claims 16 - 20, characterized in that the piston includes a valve device which is preset to balance the liquid pressure in the area of the sealing ring.

20 22. Device according to claim 21, characterized in that the valve device is set to limit the pressure to about 80 - 100% of the pressure inside the pressure chamber.

25 23. Device according to claim 21 or 22, characterized in that the valve device is comprised of a portion of the sealing ring in co-operation with its seat.

30 24. Device according to claim 23, characterized in that said portion of the sealing ring is a ring surface directed from the pressure chamber which is arranged to co-operate with a surface of said seat.

25. Device according to claim 23, characterized in that said portion of the sealing ring is an edge portion directed radially from the element it is intended to seal against.

5 26. Device according to any of the claims 16 - 25, characterized in that the piston includes at least one outlet channel for liquid.

10 27. Device according to any of the claims 16 - 22, characterized in that the valve device is a pressure controlled valve which is separate from the sealing ring.

15 28. Device according to any of the claims 16 - 27, characterized in a sealing device for sealing between the piston and the cylinder in a position opposite to the sealing ring as seen from the position of liquid supply means.

20 29. Device according to claim 28, wherein said sealing device is formed by a first, high pressure seal member (32) and a second, low pressure seal (35), and an intermediate space (44) having a fluid outlet (33).

A sealing arrangement for two relatively movable first and second parts and including a sealing ring positioned in a groove on one of the parts for sealing contact against the other one of the parts, so as to separate a first side of the sealing ring from a second side of the sealing ring, wherein the sealing ring is positioned in a sealing ring seat formed as a groove in the circumference of one of the parts, including liquid supply means for supplying liquid under pressure to the second side of the sealing ring, and means for balancing the pressure of the supplied liquid in the region of the sealing ring, whereby forces on the sealing ring resulting from the pressure prevailing on the first side of the sealing ring are counteracted and balanced in such a way that in operation the sealing ring is essentially free-floating in the groove. The invention also concerns a reciprocating piston device including such a sealing arrangement.